

The ECLIPSE

February-March
2025

The Newsletter of the Barnard-Seyfert Astronomical Society



Before and after pictures of replacement lighting at the 6th Street Bridge over the Los Angeles River. The second picture shows improvements in some aspects of light pollution, as light is not directed to the sides and upwards from the upgraded fixtures, reducing skyglow. However, it also shows the use of brighter, whiter LEDs, which is not generally ideal, along with increased light bounce back from the road. City of Los Angeles

How Can You Help Curb Light Pollution?

by Kat Troche

Light pollution has long troubled astronomers, who generally shy away from deep sky observing under full Moon skies. The natural light from a bright Moon floods the sky and hides views of the Milky Way, dim galaxies and nebula, and shooting stars. In recent years, human-made light pollution has dramatically surpassed the interference of even a bright full Moon, and its effects are now noticeable to a great many people outside of the astronomical community. Harsh, bright white LED streetlights, while often more efficient and long-lasting, often create unexpected problems for communities replacing their old street lamps. Some notable concerns are increased glare and light trespass, less restful sleep, and disturbed nocturnal wildlife patterns. There is increasing awareness of just how much light is too much light at night. You don't need to give in to despair over encroaching light pollution; you can join efforts to measure it, educate others, and even help stop or reduce the effects of light pollution in your community.

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Contact BSAS officers at
bsasnashville.com/contact, or email info@bsasnashville.com

About BSAS

Organized in 1928, the Barnard-Seyfert Astronomical Society is an association of amateur and professional astronomers who have joined to share our knowledge and our love of the sky.

The BSAS meets on the third Wednesday of each month at the at the Dyer Observatory in Nashville. Experienced members or guest speakers talk about some aspect of astronomy or observing. Subjects range from how the universe first formed to how to build your own telescope. The meetings are informal and time is allotted for fellowship. You do not have to be a member to attend the meetings.

Membership entitles you to subscriptions to *Astronomy and Sky & Telescope* at reduced rates; the club's newsletter, the *Eclipse*, is sent to members monthly. BSAS members also receive membership in the Astronomical League, receiving their quarterly newsletter, the *Reflector*, discounts on all astronomical books, and many other benefits.

In addition to the meetings, BSAS also sponsors many public events, such as star parties and Astronomy Day; we go into the schools on occasion to hold star parties for the children and their parents. Often the public star parties are centered on a special astronomical event, such as a lunar eclipse or a planetary opposition.

Most information about BSAS and our activities may be found at bsasnashville.com. If you need more information, write to us at info@bsasnashville.com.

Free Telescope Offer!

Did someone say free telescope? Yes, you did read that correctly. The BSAS Equipment & Facilities Committee has free telescopes ranging in size from 2.6" to 8" that current members can actually have to use for up to 60 days at a time. We also have some other items in the loaner program such as a photometer, H-alpha solar telescope, educational CDs, tapes, DVDs, and books. Some restrictions apply. A waiting list is applicable in some cases. The BSAS Equipment Committee will not be held responsible for lost sleep or other problems arising from use of this excellent astronomy gear. For information on what equipment is currently available, contact info@bsasnashville.com.

Happy Birthday Maria Margaretha Kirch

by Robin Byrne

This month we celebrate the life of someone who is credited as being the first woman to discover a comet. Maria Margaretha Winckelmann was born February 25, 1670 near Leipzig, Saxony (now Germany). Even though society didn't encourage educating young women, Maria's father (who was a Lutheran minister) and her uncle (who cared for Maria after both her parents died) felt differently. They took it upon themselves to provide Maria with an early education.

Maria's introduction to astronomy came from Christoph Arnold, who would be considered an amateur astronomer by today's standards. As his unofficial apprentice, Maria learned much about astronomy from Arnold. As her skills developed, Arnold "promoted" Maria to the role of assistant. The arrangement included Maria living with Arnold and his family. And it was Arnold who introduced Maria to Gottfried Kirch, an astronomer who had studied under Johannes Hevelius. It is speculated that since Hevelius worked with his wife, Elisabetha, that this example may have influenced Kirch to accept the idea of a woman working as an astronomical assistant. He even trained his three sisters to work with him. Despite being 30 years older than Maria, they married in 1692 and would eventually have a total of four children, who all studied astronomy. Through their partnership, Maria gained the opportunity to learn about and participate in astronomical pursuits, while Gottfried got an assistant, calculator, and caretaker of the children he had from a previous marriage.



One of Kirch's main astronomical pursuits was producing an annual almanac, which included the dates for the moon phases, times of sunrise and sunset, plus planet positions for the following year. Maria became instrumental in assisting in the creation of this publication. In 1697, the couple also began monitoring the weather throughout the year, and used their data to include the general weather trends as part of the almanac. All of their publications were vital for use by navigators while at sea.

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Kirch, continued

Due to the importance of the almanacs, in 1700 Gottfried was offered a position as Astronomer Royal, with the opportunity to work at an observatory being built in Berlin. Since the observatory wasn't completed until 1711, Kirch made use of a private observatory belonging to an amateur astronomer, with both Gottfried and Maria making observations through this telescope.

On April 21, 1702, while using that telescope, Maria noticed something out of the ordinary. It was a comet, now known as the "Comet of 1702." Gottfried later recalled, "Early in the morning (about 2:00 AM) the sky was clear and starry. Some nights before, I had observed a variable star and my wife (as I slept) wanted to find and see it for herself. In so doing, she found a comet in the sky. At which time she woke me, and I found that it was indeed a comet... I was surprised that I had not seen it the night before". With Gottfried's confirmation that it was a comet, and that Maria was the first to observe it, this made her the first woman known to discover a comet. Unfortunately, whether out of societal custom or pride or Maria's inability to compose the official announcement in Latin, Gottfried was the one to make the report, so the discovery was credited to him. It wasn't until about 8 years later that Gottfried admitted it was Maria who saw the comet first.

While Maria could not write in Latin, which prevented her from publishing in the accepted scientific journals, she did publish articles in German. In 1707, her first publication was a description of her observations of the Aurora Borealis. That was followed in 1709 with a pamphlet describing a conjunction that would occur in 1712 between the Sun, Saturn, and Venus.

Also in 1709, Maria gave a presentation to the Prussian Court about observations she made of sunspots. In his speech to introduce Maria to the court, Gottfried von Leibniz (the President of the Berlin Academy of Sciences), described her with the following: "There is a most learned woman who could pass as a rarity. Her achievement is not in literature or rhetoric but in the most profound doctrines of astronomy... She observes with the best observers and knows how to handle marvelously the quadrant and the telescope."

In 1710, Gottfried Kirch passed away. Maria requested to be appointed as Astronomer Royal, stepping in for her late husband. She pointed out that she had been fulfilling his duties for some time, both while he had been ill prior to his passing, as well as after his death, when Maria had continued to publish the almanacs that had been their most valued work. While Leibniz supported her appointment, he was vastly outvoted by the other members of the Academy, who opposed the idea of naming a woman as Astronomer Royal. Instead, they named a man, Johann Hoffmann, who turned out to be quite incompetent for the job. Their only concession was to allow Maria and her children to continue living in the house that had been provided for their family.

Maria continued her astronomical observations at the same observatory she and her husband originally used when they first moved to Berlin. In 1712, she published another pamphlet, this time about a conjunction of Jupiter and Saturn that would occur in 1714. In 1716, Maria's son, Christfried, was named Astronomer Royal. Maria joined him, acting as his assistant at the observatory, where they continued to create astronomical almanacs. However, the following year, the Academy members were upset that she played such a large role at the facility, saying that Maria was "... too visible at the observatory when strangers visit," and she was ordered to "... retire to the background and leave the talking to... her son." To avoid jeopardizing her son's position, Maria retired from the observatory, but continued to make observations from her home.

As her health deteriorated, Maria only stopped observing near the end of her life. On December 29, 1720, Maria Kirch passed away, after suffering from a fever for some time.

The almanacs that Gottfried and Maria Kirch produced were an amazing accomplishment, and truly a lifelong endeavor. Gottfried began publishing the almanacs in 1685, seven years before marrying Maria. They continued to be published each year until 1728, with their son carrying on the tradition for an additional eight years after Maria's death. While Maria Kirch was never officially recognized as an astronomer, she clearly devoted her life to the pursuit of astronomy, making her own observations, calculating ephemerides, producing publications, and even discovering a comet.

Today, we take for granted automated telescopes and computer programs that instantly tell us the positions of the Sun, Moon, and planets for any date and time. But for most of history, such information had to be meticulously calculated, based on continuous observations necessary to refine the positional data. That tedious work was vital for navigation, which used those astronomical positions to pinpoint a ship's location when at sea. The next time your telescope instantly slews to a view of Jupiter or Saturn, take a moment to appreciate this month's honoree and the work she performed most of her life to make such observations possible - Maria Kirch.

References:

- [Maria Margaretha Kirch - Wikipedia](#)
- [Maria Kirch - Britannica](#)
- [Maria Margaretha Winckelmann Kirch by J J O'Connor and E F Robertson - Math History, 2008](#)
- [Maria Winkelmann Kirch - She Is An Astronomer](#)

Light Pollution, continued from Page 1

Amateur astronomers and potential citizen scientists around the globe are invited to participate in the [Globe at Night \(GaN\)](#) program to measure light pollution. Measurements are taken by volunteers on a few scheduled days every month and submitted to their database to help create a comprehensive map of light pollution and its change over time. GaN volunteers can take and submit measurements using multiple methods ranging from low-tech naked-eye observations to high-tech sensors and smartphone apps.



Light pollution has been visible from space for a long time, but new LED lights are bright enough that they stand out from older street lights, even from orbit. The above photo was taken by astronaut Samantha Cristoforetti from the ISS cupola in 2015. The newly installed white LED lights in the center of the city of Milan are noticeably brighter than the lights in the surrounding neighborhoods. NASA/ESA

- Globe at Night citizen scientists can use the following methods to measure light pollution and submit their results:
- Their own smartphone camera and dedicated app
- Manually measure light pollution using their own eyes and detailed charts of the constellations
- A dedicated light pollution measurement device called a Sky Quality Meter (SQM).
- The [free GaN web app](#) from any Internet-connected device (which can also be used to submit their measurements from an SQM or printed-out star charts)

Night Sky Network members joined a telecon with Connie Walker of Globe at Night in 2014 and had a lively discussion about the program's history and how they can participate. The audio of the telecon, transcript, and links to additional resources can be found on their [dedicated resource page](#).

[DarkSky International](#) has long been a champion in the fight against light pollution and a proponent of smart lighting design and policy. Their website (at darksky.org) provides many

resources for amateur astronomers and other like-minded people to help communities understand the negative impacts of light pollution and how smart lighting policies can not only help bring the stars back to their night skies but make their streets safer by using smarter lighting with less glare. Communities and individuals find that their nighttime lighting choices can help save considerable sums of money when they decide to light their streets and homes “smarter, not brighter” with shielded, directional lighting, motion detectors, timers, and even choosing the proper “temperature” of new LED light replacements to avoid the harsh “pure white” glare that many new streetlamps possess. Their [pages on community advocacy](#) and on [how to choose dark-sky-friendly lighting](#) are extremely helpful and full of great information. There are even [local chapters](#) of the IDA in many communities made up of passionate advocates of dark skies.

DarkSky International has notably helped usher in “[Dark Sky Places](#),” areas around the world that are protected from light pollution. “[Dark Sky Parks](#),” in particular, provide visitors with incredible views of the Milky Way and are perfect places to spot the wonders of a meteor shower. These parks also perform a very important function, showing the public the wonders of a truly dark sky to many people who may have never before even seen a handful of stars in the sky, let alone the full, glorious spread of the Milky Way.

More research into the negative effects of light pollution on the [health of humans](#) and the environment is being conducted than ever before. Watching the nighttime light slowly increase in your neighborhood, combined with reading so much bad news, can indeed be disheartening! However, as awareness of light pollution and its negative effects increases, more people are becoming aware of the problem and want to be part of the solution. There is even an episode of [PBS Kid’s SciGirls](#) where the main characters help mitigate light pollution in their neighborhood!

Astronomy clubs are uniquely situated to help spread awareness of good lighting practices in their local communities in order to help mitigate light pollution. Take inspiration from [Tucson, Arizona](#), and other dark sky-friendly communities that have adopted good lighting practices. Tucson even [reduced its skyglow by 7%](#) after its own citywide lighting conversion, proof that communities can bring the stars back with smart lighting choices.

This article is distributed by NASA Night Sky Network.

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more! You can catch up on all of NASA’s current and future missions at nasa.gov.

With articles, activities and games NASA Space Place encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

Barnard-Seyfert Astronomical Society
Minutes – Board of Directors
Feb. 5, 2025

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held February 5, 2025, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Tony Drinkwine, Bud Hamblen, Steve Hughes, Gene Matthews, Keith Rainey, Andy Reeves and Theo Wellington.

Meetings: The February 19, 2025, meeting will include a presentation by Dr Jason Dworkin on Osiris REX. The March 19, 2025, meeting will be a “What’s Up” oriented toward Messier objects, presented by Theo.

Minutes: The minutes of the January 8, 2025, board meeting were adopted without discussion.

MTSEF Award. It has been customary to award cash prizes and club memberships for outstanding projects relating to astronomy. The board resolved unanimously to continue the award this year. First prize is \$100 and a family membership; second prize is \$50 and a family membership; third prize is \$25 and a family membership. Prizes may not be awarded if there are not qualifying projects. Family memberships are awarded owing to the participants being minors and will include parents or guardians.

Star Parties and Outreach: The February 1 event at Warner Park was clouded out. A members-only event is scheduled for February 22, 2025, at the parking area at Natchez Trace Mile Marker 435.3. The permit is now available on Google Groups. A public event is scheduled for March 1 at Bells Bend Outdoor Center. Judges are needed for the Middle Tennessee Science and Engineering Fair is scheduled for March 21, 2025 at Belmont University. There are approximately 130 submissions. The proposed star gazing event in Wartrace may be held on March 8 instead of April 26. The date is not yet final. Discussions with 1st United Methodist Church, Franklin, Tennessee, and Smyrna Parks and Recreation, to have public star gazing events are continuing.

There being no further business, the meeting was adjourned.

Respectfully submitted,
 Bud Hamblen, Secretary

Become a Member of BSAS! Visit bsasnashville.com to join online.

All memberships have a vote in BSAS elections and other membership votes. Also included are subscriptions to the BSAS and Astronomical League newsletters.

Annual dues:

- Regular: \$25
- Family: \$35
- Senior/Senior Family: \$20
- Student: * \$15



*** To qualify as a student, you must be enrolled full time in an accredited institution or home schooled.**

Barnard-Seyfert Astronomical Society
Minutes — Board of Directors
March 5, 2025

The regular meeting of the Board of Directors of the Barnard-Seyfert Astronomical Society was held March 5, 2025, online, Dr. Tom Beckermann presiding. Logged in were Tom Beckermann, Donna Burgess, Tony Drinkwine, Bud Hamblen, Steve Hughes, Gene Matthews and Theo Wellington.

Meetings: The March 19, 2025, meeting will be a “What’s Up” oriented toward Messier objects, presented by Theo. We are looking for presenters for April and beyond.

Membership report: Keith Rainey emailed a membership count of 229.

Minutes: The minutes of the board meeting of February 5, 2025, were adopted without discussion.

Social media report: The Facebook page was liked by 2.3K and followed by 2.6K.

Star parties and outreach: There was a good turnout on February 22 at the members-only star party on the Natchez Trace. About 75 people attended the public star party on March 1 at the Bell’s Bend Outdoor Center. The proposed star gazing event in Wartrace may be held on March 8. The date is not yet final. There is a total lunar eclipse in the early hours of March 14; no specific event is planned. Montgomery Bell State Park will be the venue for a star party the evening of March 14. Chuck Schlemm will be having solar viewing and star gazing. Judges are needed for the Middle Tennessee Science and Engineering Fair scheduled for March 21, 2025, at Belmont University. There are approximately 130 projects submitted (the most ever). Ron Ladd offered to host the Messier Marathon on March 28. The Water Valley Overlook is also available on March 29. A public star is scheduled for April 5th at Bowie Nature Park in Fairview. The club will have a booth with solar viewing at Bells Bend Outdoor Festival on April 12. Discussions with 1st United Methodist Church, Franklin, Tennessee, and Smyrna Parks and Recreation, to have public star gazing events are continuing. The church will need a copy of our certificate of insurance as well as being named as an additional insured.

Treasurer’s report: Theo reported the bank balance to be \$9,346.06 (\$3,875.41 in the equipment fund and \$5740.65 in the general fund). Monthly expenses are \$17.47 for the Zoom account and \$32 for the storage unit. The PayPal account had been transferred to the bank.

There being no further business, the meeting was adjourned at 8:30 PM.

Respectfully submitted,
Bud Hamblen, Secretary

Barnard-Seyfert Astronomical Society
Minutes — Monthly Membership
Feb. 19, 2025

The Barnard-Seyfert Astronomical Society met on-line via Zoom for the regular general meeting on Wednesday, February 19, 2025, Dr Tom Beckermann presiding. About 27 participants zoomed in.

Dr Jason Dworkin, Director Astrobiology Analytical Laboratory at NASA Goddard Space Flight Center, presented a talk on the OSIRIS-REX space mission. A link to a recent video on the mission is at <https://plus.nasa.gov/video/to-an-asteroid-and-back/>

Meetings: The March membership meeting is scheduled for 7:00 PM, March 19, 2025, at Vanderbilt's Dyer Observatory. Theo Wellington will present a "What's Up?" for a Messier Marathon. Tom asked for help with future presenters.

Membership report: Keith Rainey reported 228 members.

Minutes: The minutes for the general meeting on January 15, 2025, were adopted without discussion.

Social Media: Theo Wellington reported that the Facebook page was liked by 2.3K persons, and followed by 2.6K. Twitter has 324 followers.

Star parties and events: Tom asked for help developing new star party locations. A members-only star party is scheduled for February 22, 2025, at the Natchez Trace Mile Marker 453.5 parking lot. A public star party is scheduled for March 1, 2025, at the Bells Bend Outdoor Center. There will be a total lunar eclipse the night of March 13-14. A club event is not organized for the eclipse. The Middle Tennessee Science and Engineering Fair is scheduled for Mar 21 at Belmont University. See <https://mtsef.stemwizard.com/> The BSAS is sponsoring an award for the best astronomy related projects. Tom called for volunteers to judge the event. A members-only star party/Messier Marathon is scheduled for March 28 at the Natchez Trace Water Valley Overlook. Be sure to check the Google Group (<https://groups.google.com/g/bsasnashville>) for a potential change of venue.

Treasurer's report: Theo reported that the bank balance is \$9,346.06 (\$3,875.41 in the equipment fund and \$5740.65 in the general fund). Expenses since last member meeting Included \$17.47 for the Zoom account.

[The live YouTube recording of the meeting is here.](#)

There being no further business, the meeting adjourned at 8:30 PM.

Respectfully submitted, Bud Hamblen, Secretary

Barnard-Seyfert Astronomical Society
Minutes – Monthly Membership
March 19, 2025

The Barnard-Seyfert Astronomical Society met at Vanderbilt's Dyer Observatory and on-line for the regular general meeting on Wednesday, March 19, 2025, Dr Tom Beckermann presiding. Twenty-six persons signed in at Dyer.

Theo Wellington was unable to make the scheduled presentation on "running" a Messier Marathon, but made her slides available for Tom Beckermann to present.

Meetings: The April membership meeting is scheduled for Wednesday the 16th at 7:00 PM. A program is to be announced. Tom asked for help with future programs.

Membership report: There are 228 members.

Minutes: The minutes for the general meeting on January 15, 2025, were adopted without discussion.

Social Media: Theo Wellington reported that the Facebook page was liked by 2.3K persons, and followed by 2.6K. Twitter has 324 followers.

Star parties and events: A members-only star party was held on February 22, 2025, at the Natchez Trace Mile Marker 453.5 parking lot, and was well attended. A public star party was held on March 1, 2025, at the Bells Bend Outdoor Center. This event had a good turnout. The total lunar eclipse on the night of March 13-14 was visible. A public event was held at Montgomery Bell State Park on March 14. About 20 people came out. The Middle Tennessee Science and Engineering Fair is scheduled for Mar 21 at Belmont University. See <https://mtsef.stemwizard.com/> The BSAS is sponsoring an award for the best astronomy related projects. Tom called for volunteers to judge the event. A members-only star party/Messier Marathon is scheduled for March 28/19 at the Natchez Trace Water Valley Overlook. Be sure to check the Google Group (<https://groups.google.com/g/bsasnashville>) for a potential change of venue. A public star party is scheduled at Bowie Nature Park for April 5 from 8 to 10PM. An event is scheduled for April 6 at the Schermerhorn Symphony Center fro 1:30 to 3 PM. The Bells Bend Outdoor Festival is scheduled for April 12, from 9 AM to 3 PM. There will be a public star party on April 19 in Wartrace, Tennessee. Star parties are planned at Cedars of Lebanon State Park on April 19 and 25, and at Henry Horton State Park on April 18 and 26.

Treasurer's report: The bank balance is \$9,346.06 (\$3,875.41 in the equipment fund and \$5740.65 in the general fund). Expenses since last member meeting included \$17.47 for the Zoom account.

[The live recording of the meeting is here.](#)

There being no further business, the meeting adjourned at 8:30 PM.

Respectfully submitted, Bud Hamblen, Secretary



In honor of the club's 90th anniversary we partnered with Hatch Show Print to create a unique poster that would honor the achievement of the club. For those who don't know Hatch Show has been making posters for a variety of events and concerts for 140 years. In all that time we are their first astronomy club.

On the poster at the center is the moon. This was made from a wood grained stencil that the shop has used for over 50 years. To contrast that the telescope that the people are using is a brand new stencil made for our poster.

The poster has three colors. First the pale yellow color of the moon was applied. Next the small stars, circles, and figures at the bottom were colored in metallic gold. The third color is a blue for the night sky.

Where it overlaps with the metallic gold it creates a darker blue leaving the figures at the bottom looking like silhouettes.

This was a one time printing so the 100 that we have are all that will be printed.

The prints are approximately 13 3/4" x 22 1/4" and are available for \$20 at our membership meetings, or \$25 with shipping by ordering through bsasnashville.com. Frame not included.



Next BSAS meeting
Wednesday, April 16, 7:00 pm

Dyer Observatory
 1000 Oman Dr.
 Brentwood, TN 37027